

## ABSTRACT

This invention pertains to a method and apparatus for determining the thickness of a ferromagnetic or paramagnetic material when only one side of the material is accessible. In one embodiment, the invention provides a method for 5 engaging a constant signal with the ferromagnetic material for inducing a changed signal, generating a stepped saturation signal over a range of currents for engagement with the ferromagnetic material, detecting the changed signal as the saturation signal is varied over the range of currents, determining the relationship between the changed signal and the stepped saturation signal, and evaluating the 10 thickness of the material based upon the relationship between the changed signal and the stepped saturation signal. In another embodiment, the invention provides for an apparatus comprising a transmitter for engaging a constant signal with the ferromagnetic material for creating a changed signal, a saturation device for generating a saturation signal over a range of currents for engagement with the 15 ferromagnetic material, a receiver for detecting the changed signal as the saturation signal is varied over the range of currents, such that the relationship between the changed signal and the saturation signal is determined, and the thickness of the material based upon the relationship is determined.